

**SYSTEM AND METHOD FOR PROVIDING
A VARIABLE BREAKDOWN BIPOLAR TRANSISTOR**

5 **ABSTRACT OF THE DISCLOSURE**

A system and method is disclosed for providing a variable breakdown bipolar transistor. A trench is etched in a substrate between a first area (base/emitter area) and a second area
10 (sinker/collector area). The sinker/collector contact area and a portion of the bottom of the trench adjacent to the sinker/collector area are then heavily doped. The lateral distance between the base/emitter area and the edge of the heavily doped trench determines the breakdown voltage between the emitter and
15 collector and between the base and collector. Heat treatment diffuses the dopant in the bottom of the trench laterally and diffuses the dopant in the sinker/collector area downward until the two areas are joined to form a unified sinker/collector structure.